2-5. Framework for Natural Disaster Databases

A key tool for the establishment of effective countermeasures against future natural disasters is information on previous disasters, including information on what measures were taken for natural disasters of different scales, details regarding the efficacy of those measures, and lessons learned from past disaster experiences. A comprehensive database of the natural disasters that have occurred in Asia in this century will serve as a valuable asset for the next century.

Several organizations currently have their own statistical databases of this century's natural disasters. Natcat, a Munich reinsurer, has accumulated information on more than 20,000 disasters dating back as far as 79 A.D. Sigma, a Swiss reinsurer, has a database containing information on more than 7,000 disasters that have occurred since 1970. And the Centre for Research on the Epidemiology of Disasters (CRED) at Louvain Catholic University in Belgium has EM-DAT, which contains information on 15,700 natural and technological disasters blamed for more than 10 deaths, and dates back to 1900. In addition, disaster information is disseminated over the Internet by various organizations, including UNOCHA, which has provided situation reports on major disasters that have occurred since 1980. LaRED, which is based in Latin America, collects and provides information on small- to medium-scale natural disasters that are not covered by either CRED or UNOCHA.

At its International Meeting (annual meeting of member counties) in December 1999, ADRC stressed the importance of making good use of these existing databases, as well as the importance of constructing a comprehensive database of natural disasters in the 20th century to be linked with these existing resources. To promote such global information networking, ADRC became a member of the Global Disaster Information Network (GDIN) in April 2000, and proposed the use of a global disaster identifier system at the GDIN conference held in Canberra in March 2001. The disaster ID system proposed by ADRC was launched as a pilot project in 2001. Since 2002, ADRC has been using its role as a member of the ISDR Inter-Agency Task Force to encourage various activities for the more effective sharing of disaster information. In 2003, ADRC jointly organized a GLIDE technical meeting with the UN/ISDR and ReliefWeb. The meeting was welcomed by many international and regional organizations. GLIDEnumber.net (http://glidenumber.net/) has been running and generating GLIDE numbers online since May 2004.

ADRC has been implementing projects with various Asian countries so that the natural disaster databases currently managed by those countries can be easily linked through the incorporation of GLIDE numbers. In August 2006, ADRC and the government of the Philippines launched a disaster database development project for incorporating GLIDE numbers. The web-based natural disaster database, CALAMIDAT, was established in April 2007. Moreover, ADRC started capacity building programs in all 10 ASEAN countries last year. As part of last year's program, officials in charge of disaster information in the Philippines, Thailand, and Lao PDR were invited to ADRC to work on the development of GLIDE-associated disaster database in their countries.

2-5-1. Current Status of Disaster Information Sharing

Many organizations collect and analyze disaster information relevant only to their own priority themes, and provide some of the results through media including the Internet. Many of these organizations link their websites to relevant organizations to facilitate information sharing.

Among such organizations, UNOCHA has already started to provide highly reliable disaster information. It has set up ReliefWeb on the Internet to provide disaster information collected from all over the world. ReliefWeb contains detailed situation reports and other materials on disasters that have occurred since 1980. These resources are available on paper basis. Thus, the site allows access to synopses of disasters that have occurred over the past 20 years, including the response measures taken.

UNOCHA opened its Kobe Office in August 2001, and has been providing disaster information on a round-the-clock basis from three cities: Kobe, Geneva and New York.

In addition to the organizations above, universities and institutes around the world have information on disasters that have occurred in their respective areas, and information related to their fields of expertise. These institutions have also made some of their data available online.

For some past disasters, especially floods and droughts, it is often difficult to determine the exact time of occurrence. Recorded dates of disasters may vary in different databases. Also, disasters are often classified and named differently from source to source. These factors make it difficult to

identify the disaster record available from one source with that from another, especially when the disaster occurred in the distant past.

For disasters that have occurred in Japan, comprehensive detailed references are available including the “Chronological Scientific Tables” and “Meteorological Yearbook.” A list of major disasters in Japan as recorded in the “Disaster Prevention White Paper” is available online for download. The Disaster Reduction and Human Renovation Institution of Hyogo Prefecture launched a comprehensive disaster database using the GLIDE system, the global disaster ID system to be explained in Section 2-6-3, to facilitate information sharing. The GLIDE system is also used by the National Research Institute for Earth Science and Disaster Prevention (NIED) for its "Digital Typhoon Project" site and its database on typhoons that have occurred over the past 50 years.

2-5-2. Data Book on Asian Natural Disasters 2006

Natural disasters can have a serious impact on the life of a community in general and on its economic development in particular. As revealed by statistics accumulated over the past 100 years, Asia is more prone to natural disasters than any other region of the world, and accounts for more than 90% of the population affected by disasters and 50% of the world's total death toll and economic losses. It is therefore very important that the analysis of individual past disaster events include efforts to identify general trends over time from the perspective of development.

In July 2000, ADRC published the "Data Book on Asian Natural Disasters in the 20th Century," which incorporates the member country data accumulated from EM-DAT, along with numerous other statistics and analyses. The revised edition, the "Data Book on Asian Natural Disasters in the 20th Century Vol. 2," was published in August 2002.

Every year, ADRC publishes a compilation of the previous year's reports in its Natural Disasters Data Book. For example, the “Natural Disasters Data Book 2006” was published in March 2007. These books enable ADRC to provide helpful information to policymakers, academics, as well as grassroots activists involved in community disaster prevention activities.

2-5-3. Current Status of “GLIDE”

GLIDE is the acronym for the GLobal unique disaster IDEntifier system, in which commonly formatted but unique numbers are assigned to disasters all over the world. The GLIDE system was first proposed by ADRC and has been adopted and used by more than 20 international organizations and research institutes.

ADRC has its own criteria for how new GLIDE numbers are generated. In Japan, a new GLIDE number will be generated if a disaster occurs in which either five or more people are killed or 100 or more people are injured. In other countries, a new GLIDE number will be generated if a disaster occurs in which either 10 or more people are killed or 100 or more people are injured.

2-5-3-1 Disaster Information Sharing Using GLIDE Numbers

There are many organizations around the world that design and develop their own disaster databases that are freely accessible online. When a disaster occurs, information is distributed over the Internet not only by organizations in the affected countries but also by organizations and the mass media in other countries. Whenever a disaster occurs in any part of the world, ADRC collects information from websites of relevant organizations and worldwide news agencies, or by sending e-mails to contact persons in the affected area. Over the course of its experience, ADRC has come up against several problems in collecting disaster information using these conventional methods, including the following.

(1) Considerable manpower is needed to search the Internet for websites of relevant individual organizations every time a disaster occurs.
(2) There is no standardized naming protocol for disasters. As many different names are given to a certain single disaster by various organizations, even search engines such as Google or Yahoo sometimes return no results.
(3) Website links may be lost when the structure of particular organization's database or website is modified.

The GLIDE system offers a solution to these problems. It will significantly improve the efficiency with which information on historical and ongoing disasters can be retrieved from databases and websites.

At the Global Disaster Information Network (GDIN) Conference held in Canberra, Australia in March 2001, ADRC proposed the development of a standardized coding system for managing information on disasters around the world. This proposal was accepted for implementation as a pilot project by the GDIN. In 2004, glidenumber.net was jointly developed by the ADRC and OCHA ReliefWeb, with technical assistance provided by LaRED. It is designed to issue new GLIDE numbers to disasters immediately after they occur. Moreover, ADRC, the CRED, IRI/Columbia University, the USAID/OFDA, the WMO, IFRC, UNDP, and ISDR Secretariat have agreed to use the GLIDE number format as the standard for assigning disaster identification numbers.

The GLIDE number format was revised in 2004 as follows:

AA-BBBB-CCCCCC-DDD-EEE

AA: Disaster classification

Drought	DR
Heat Wave	HW
Cold Wave	CW
Tropical Cyclone	TC
Extratropical Cyclone	EC
Tornado	TO
Violent Wind	VW
Severe Local Storm	ST
Flood	FL
Flash Flood	FF
Land Slide	LS
Snow Avalanche	AV
Mud Slide	MS
Volcano	VO
Earthquake	EQ
Fire	FR
Tsunami	TS
Storm Surge	SS
Epidemic	EP
Insect Infestation	IN
Wild Fire	WF
Others	OT
Complex Emergency	CE
Technological	AC

BBBB: Year of occurrence (4-digit numeric figure)
CCCCCC: Serial number by year
DDD: Country code (ISO code. e.g., JPN for Japan)
EEE: Region code (e.g., 013 for Tokyo)

Fig. 2-5-3-1 Structure of GLIDE

The local code at the end can be added for the convenience of user countries in organizing their national databases. This format is still in use among GLIDE-issuing organizations.

Databases that incorporate GLIDE numbers will have the following advantages:

① A parameterized search function allows user organizations to easily connect pieces of disaster information archived by various organizations.
② A search engine, developed to focus on particularly important information for user organizations, allows a one-stop search and display of all the necessary data, eliminating the

need to conduct additional searches for data independently archived by individual organizations.

The current status of GLIDE use by partner organizations is described in the table below.

	Name of organization	Status of GLIDE utilization
GLIDE number issuance & utilization on disaster website/database	Asia Disaster Reduction Center (ADRC)	Uses GLIDE numbers to report latest disasters, in conjunction with ReliefWeb.
	OCHA ReliefWeb (Office for the Coordination of Humanitarian Affairs)	Issues GLIDE numbers and creates linkages using GLIDE numbers.
	LaRED	A disaster database in Latin America. Issues GLIDE numbers to its own database records.
	International Federation of Red Cross and Red Crescent Societies (IFRC)	Issues GLIDE numbers when transmitting disaster information for Red Cross activities.
	JRC/GDACS (EU)	Disaster information website in the EU
	Caribbean Disaster Emergency Response Agency (CDERA)	GLIDE numbers are utilized in the disaster databases of Caribbean countries.
	OCD, NDCC (Philippines)	Issues GLIDE numbers to records on disasters over the past 35 years in a joint project with ADRC and publishes them online.
GLIDE number utilization on disaster website/database	UN Food and Agriculture Organization (FAO)	Uses GLIDE numbers to link existing disaster records to the FAO's Mapping System of agricultural disasters.
	Japan Aerospace Exploration Agency (JAXA)	Scheduled to provide satellite information linked to the latest disaster information of ADRC.
	Dartmouth Flood Observatory (Dartmouth University, USA)	Uses GLIDE numbers to floods recorded worldwide.
	UNOSAT	Utilizes GLIDE numbers in the provision of satellite images.
	Benfield (UK)	Research agency of a reinsurance company in UK that utilizes GLIDE numbers on its disaster website (inTERRAgate).
	SHELUDUS (South Carolina University, US)	Uses GLIDE numbers to disaster data in US. GLIDE can be used as a search term.
	PDC (Pacific Disaster Center)	Uses GLIDE numbers to disasters on its website.
	National Research Institute of Earth Science & Disaster Prevention (NIED)	Uses GLIDE numbers to disasters in its database.
GLIDE-supporting international organizations	United Nations Development Programs (UNDP), International Strategy for Disaster Reduction (ISDR), CRED, WMO	GLIDE propagation and promotion are supported by these UN organizations.

Fig. 2-5-3-2 Current GLIDE Partnerships

(1) Collaboration with UN agencies

The United Nations Development Programme (UNDP) has been facilitating the Global Risk Identification Programme (GRIP) for several years. GRIP will expand and improve the base of evidence on disaster-related losses. Historical loss data is necessary for risk assessment and for measuring progress towards the expected outcome of the Hyogo Framework of Action, that is, the substantial reduction of disaster losses. The main and ultimate objective of this outcome area is the establishment of National Disaster Observatories which promote the systematic collection and organization of loss data into databases for analysis and use. Work in this outcome area also

includes the development and promotion of tools and standards for the collection, storage, exchange, and analysis of damage and loss assessment data. The GLIDE system provides an external identifier for disasters, which is essential to GRIP.

Disaster Database Standards that define standardized processes and structures for the development of national disaster databases, are now being developed by a working group under GRIP. ADRC, as an disaster database expert, has been contributing to these standards with the aim of promoting the GLIDE system worldwide.

(2) Typhoon Committee

The Typhoon Committee organized by UNSCUP/WMO built the Typhoon Committee Disaster Information System (TCDIS). This system uses GLIDE numbers as serial numbers for disasters primarily caused by typhoons. In 2008, ADRC attended the Workshop of the Disaster Prevention and Preparedness Working Group (DPP-WG), and the Integrated Workshop of the Typhoon Committee. ADRC attended these events to promote the use of GLIDE numbers in the TCDIS, and to review the progress being made on the committee' program.

South Korea, which developed the TCDIS, has a disaster database that tracks disasters using an original code. ADRC would like to promote the establishment of the GLIDE system by combining these data codes with appropriate GLIDE numbers.

(3) Cooperation with the RSOE

To explore the possibility of further developing the GLIDE system, ADRC visited the Budapest-based National Association of Radio-Distress Signaling and Infocommunications (RSOE based on the Hungarian name: Rádiós Segélyhívó és Infokommunikációs Országos Egyesület), and had a meeting with the head of the organization.

Founded in 1982, the RSOE started out working as a disaster information agency for the Danube River region, but it currently functions as a more comprehensive disaster information center that collects and disseminates worldwide disaster information. Being a small NGO with fewer than 30 staff members, the RSOE is diligently working to provide disaster information via the latest technologies. For example, the RSOE uses the Google Earth-based unique disaster identifier, and issues multilingual instant disaster notifications via e-mail.

The RSOE's Google Earth-based unique disaster identifier is similar to the GLIDE number in terms of its structure and function. It is sequenced as follows: (two-letter initials indicating the disaster type) - (date and year) - (5-digit serial number) - (call country). One of the advantages of the RSOE's unique disaster identifier is that the user can easily identify the geographic image of the disaster by clicking the icon on the Google Earth map, and then following links to the disaster information.

In our meeting with the director, an RSOE staff member gave an overview of the organization and its activities. Operating in cooperation with government ministries in Hungary, the RSOE functions as the disaster management division of the EU and engages in EU-related projects. The present status of the RSOE suggests that its ongoing cooperation with ADRC will lead to broader geographical coverage for the dissemination of disaster information by ADRC, with two bases in Europe and Asia.